REMARKS

Applicant herein argues that U.S. Patent #4,227,366 issued to Pucher (hereinafter Pucher) as cited by Examiner does not anticipate Applicant's invention under 35 U.S.C. § 102. Pucher does not teach any method or apparatus pertaining to corn harvesting machinery for reducing stalk shear, which is the problem Applicant solves. Pucher, as cited by the Examiner, does not anticipate Applicant's invention and instead demonstrates the inadequate operation of prior art corn head row units and corn heads as related to stalk shear.

Pucher states that what is considered to be inventive is "the improvement [disclosed] comprising: said at least one power input shaft [70] is positioned externally of said gear housing [also referred to as "box beam 50" in other portions of the specification], each said clutch means [80] being affixed to said at least one power input shaft [70] externally of said gear housing [50, see above], said power transfer means [85] being a detachable flexible member." (Col. 7 lines 25-31.) Therefore, the inventive elements and/or element configuration disclosed in Pucher are the position of a clutch means 80 affixed to a power input shaft 70, both mounted externally from a gear housing 50, wherein said power input shaft 70 transfers mechanical energy to the gearbox shaft 56 via a detachable flexible member 85 (a chain and sprocket mechanism as explained in col. 4 lines 23-25). This configuration dispenses with the need to remove the driveshaft from the gearbox and then remove the clutch from the driveshaft to service the clutch, a problem noted by Pucher at col. 1 lines 28-31. The design in Pucher also dispenses with the alignment and weight problems caused by using multiple, shorter drive shafts; problems noted by Pucher at col. 1 lines 39-41. None of the aspects of the design in Pucher are directed towards mitigating stalk shear. In fact, nowhere in the body or in the claims does Pucher address, attempt to solve or suggest any possible solutions to the problem of stalk shear. On the contrary, as explained below, some aspects of the design in Pucher actually accentuate the

problem of stalk shear. Unlike Pucher's design, Applicant's invention is directed at solving the problem of stalk shear.

Pucher does not discuss nor disclose any variance in gathering chain speed at a constant stalk roll speed (horizontal motion of the stalk with respect to the corn head row unit and vertical motion of the stalk with respect to the corn head row unit, respectively), one of Applicant's disclosed solutions to the problem of stalk shear (pg. 2 paragraphs 24-29). Applicant discloses two methods for reducing gathering chain speed at a given stalk roll speed to substantially reduce stalk shear (which subsequently reduces material other than ears ("MOTE") accumulation on the crop header, reducing plugging of the crop header and increasing the efficiency of the crop header): (1) Reducing the number of teeth (and hence reducing the diameter) of the gathering chain drive sprocket, thus reducing the linear velocity of the gathering chain drive sprocket at a given rotational velocity; and (2) Changing the gearing on the internal gears of the gear box which drive the stalk engaging components (pg. 2-3, paragraphs 31-32). Applicant further discloses two methods for reducing stalk shear without changing the rotational relationship between the components driving the gathering chains and the stalk rolls: (1) Lengthening the exposed fluted area of the stalk roll (this would allow the stalk roll more time to pull the stalk downwards before the stalk contacted the shear point), and (2) Increasing the diameter of the stalk roll used to engage the stalk (this would translate into a higher linear velocity of the circumference of the stalk roll at a fixed rotational velocity or rpm)(pg. 3, paragraphs 33-34).

The relationship among Applicant's four methods is described in detail at page 2, paragraphs 23-28, after which Applicant notes, "[O]ne of the best ways to avoid corn stalk shear . . . is to install a smaller gathering chain sprocket in a row unit using a dependent drive system [because] [t]his slows down just the gathering

chain or chains while allowing the rest of the corn head to operate at its normal operating speed." (pg. 2, paragraph 29). By slowing down the gathering chain speed with respect to other elements of the corn head, Applicant is able to increase the volume a given header is able to achieve by reducing MOTE, which is counter-intuitive since a common method for increasing volume in a given system is to increase the speed at which the elements within the system operate rather than decrease the speed of one element with respect to the other elements of the system. There is no suggestion, motivation or teaching in Pucher to incorporate or employ any of Applicant's four methods as cited above to reduce stalk shear because Pucher in no way mitigates or even attempts to mitigate the problem of stalk shear. Therefore, the Examiner's previous rejections should be withdrawn.

Applicant's design teaches away from shearing or cutting the stalk in order to reduce MOTE and achieve higher capacities and efficiencies for harvesting machines, with one of the disclosed methods for reducing stalk shear being slowing down the speed of the gathering chains with respect to the stalk rolls. ("The slower speed gathering chain paddles 110 . . . reduc[e] the possibility that a gathering chain paddle 110 will push into the upper portion of the corn plant stalk 325 and produce a shearing of the stalk . . . ." Pg. 4, paragraph 53, lines 3-9.) In new claims 53-56, Applicant claims and describes an improved arrangement of a corn head row unit wherein the row unit has a shear point 135 with a rounded edge to further mitigate the possibility of shearing the plant stalk. (See also Figures 7-10.) On the other hand, Pucher discloses "a V-shaped cut-off 99 is positioned between the deck plates 96 adjacent the box beam 50 [to] provide a means for cutting the crop material." (Pucher, Col. 5, lines 21-25, Emp. Added.) The purpose and teaching of Applicant's shear point 135 with a rounded edge is to avoid cutting or shearing the stalk, thereby minimizing what is known as "hair-pinning" of the stalks upon the deck plate. Applicant is also teaching

avoidance of cutting stalks to reduce material that plugs the row unit and to reduce MOTE transferred to the combine harvester. Pucher is teaching a V-shaped cut-off 99 with the objective of increasing the ability to shear or cut off the stalk, thereby increasing potential for plugging of the row unit from crop material and MOTE. Thus, the design in Pucher (a V-shaped cut-off 99 to shear or cut the stalk) accentuates the problem that is solved by Applicant's invention (minimization of stalk shearing, which leads to a reduction of MOTE transferred to the combine harvester).

CONCLUSION

In light of the above amendments and remarks, Applicant submits that the claims are in condition for allowance, and requests that the outstanding rejections be withdrawn. If a telephone conference would expedite allowance of the claims, the examiner may wish to telephone Applicant's Attorney at 563-441-0207.

Respectfully submitted,
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Date: August 8, 2006

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